

Amendments to and Listing of the Claims:

Please *cancel claims 1-11 & 23-26* and *add new claims 29-41*, all without prejudice, as shown below in the following listing of all claims ever presented. The following listing of claims replaces all prior versions thereof.

1-11. **(Canceled)**

12-22. **(Canceled)**

23-26. **(Canceled)**

27-28. **(Canceled)**

29. **(New)** A tantalum film having a single crystal microstructure characterized by an x-ray diffraction peak at $2\theta=55^\circ$ and characteristic (100) spot diffraction pattern and having no grain boundaries.

30. **(New)** The tantalum film according to claim 29, wherein the tantalum is α -tantalum.

31. **(New)** The tantalum film according to claim 29, having a resistance of 15-30 $\mu\Omega$ cm.

32. **(New)** The tantalum film according to claim 29, having a net diffusion distance of less than 10 nm after annealing with copper at a temperature between 650°-750° C for 1 hour.

33. **(New)** The tantalum film according to claim 29, wherein the tantalum is α -tantalum and the film has a resistance of 15-30 $\mu\Omega$ cm and a net diffusion distance of less than 10 nm after annealing with copper at a temperature between 650°-750° C for 1 hour.

34. **(New)** A tantalum film having an amorphous microstructure characterized by a diffuse x-ray diffraction peak at $2\theta=30-35^\circ$ and a diffuse ring in the electron diffraction pattern and having no grain boundaries.

35. **(New)** The tantalum film according to claim 34, having a resistance of 250-275 $\mu\Omega$ cm.

36. **(New)** The tantalum film according to claim 34, having a net diffusion distance of less than 10 nm after annealing with copper at a temperature between 650°-750° C for 1 hour.

37. **(New)** The tantalum film according to claim 34, having a resistance of 250-275 $\mu\Omega$ cm and a net diffusion distance of less than 10 nm after annealing with copper at a temperature between 650°-750° C for 1 hour.

38. **(New)** A microelectronic device having a silicon substrate, a tantalum film deposited on the silicon substrate and a copper layer disposed on the tantalum film, wherein the tantalum film has a single crystal microstructure characterized by an x-ray diffraction peak at $2\theta=55^\circ$ and characteristic (100) spot diffraction pattern and having no grain boundaries.

39. **(New)** A microelectronic device having a silicon substrate, a tantalum film deposited on the silicon substrate and a copper layer disposed on the tantalum film, wherein the tantalum film has a single crystal microstructure characterized by a diffuse x-ray diffraction

peak at $2\theta=30-35^\circ$ and a diffuse ring in the electron diffraction pattern and having no grain boundaries.

40. (New) The device of claim 38, wherein the device has a buffer layer of TiN or TaN deposited between the silicon substrate and said tantalum film.

41. (New) The device of claim 39, wherein the device has a buffer layer of TiN or TaN deposited between the silicon substrate and said tantalum film.